BRIEF OUTLINE OF THE CAUSE AND TREATMENT OF CHRONIC POLYARTHRITIS

WITH REPORT BASED UPON ONE HUNDRED AND FOUR CASES TREATED

By REA SMITH *

DISCUSSION *by Harlan Shoemaker, Los Angeles; Joseph H. Shaw, Santa Rosa.*

CHRONIC polyarthritis, in my opinion, has its origin in a focal infection in the intestinal tract, due to an unbalanced or perverted intestinal flora, made possible by the failure of some part of the ileocecal coil to empty itself properly. From the careful and repeated x-ray examination of more than one hundred cases of arthritis and the abdominal operative findings in ninety-eight cases, extending over a period of thirteen years, I have been able to draw some very definite conclusions as to the existence of an intestinal focus of infection, the nature of the intestinal deformity and the method of its production.

Infection of the teeth and tonsils are undoubtedly the cause of many cases of acute arthritis, and their removal quickly clears up the symptoms. But in chronic cases the removal of teeth and tonsils has, as a rule, very little permanent effect, the reason being that an intestinal infection has taken place and a larger focus developed so that then the clearing up of the head foci hardly affects the load of infection at all.

The similarity of the picture of the ileocecal coil in all of these cases has led me to the conclusion that the typical soil for development of arthritis is a congenitally mobile cecum which has been attached to the side wall of the abdomen by nature in an effort to lift up and anchor a prolapsing organ.

By a reduplication of peritoneum starting at the right colic artery and extending to the parietal peritoneum over the right kidney, the colon is rolled and folded so that it gives the appearance of an hour-glass, with the cecum thin-walled and toneless. There is usually a binding down of the ileum somewhere in its terminal 8 inches (20 cm.), increasing the torsion in the ascending colon so that the physiologic function of the colon is crippled and the cecum becomes an inert sac, which does not empty itself. This sac, constantly filled with culture medium, becomes infected with streptococcus, either from a head infection or from the terminal ileum, which is a natural habitat of the streptococcus viridens. The streptococcus becomes the predominating colon organism and we have an overbalanced flora resulting, which in its turn becomes the focus of infection that keeps up the arthritis.

These patients all harbor great numbers of flagellate protozoa, ameba, probably incidental to the intestinal stasis, although they may be concerned in some way in the etiology of the disease. These parasites disappear after the surgical drainage of the pool and administration of oil.

The most striking results which follow the *removal* of the right colon has proved to me the colonic origin of the disease. This operation deprives the patient of his filter, and for ten days there is practically no water absorbed by the intestinal tract. It becomes necessary to supply water subcutaneously in order to prevent dehydration. My routine consists in giving a quart of salt solution daily by hypodermoclysis until the quantity of urine increases from approximately 1000 to 2000 cc. This happens usually from the tenth to the twelfth day. During this ten-day period the patient makes a wonderful recovery from joint trouble. In from forty-eight to seventy-two hours, the swelling disappears and the joints become more and more movable and the pain entirely disappears; but on the day the quantity of urine doubles, showing that the intestinal tract is again absorbing water, the symptoms recur. The perverted flora is still able to act as a focal infection and the joints then clear up slowly as the flora returns to normal. The removal of the right colon, however, particularly in debilitated patients, is such a formidable procedure that I have endeavored to develop a method of restoring the physiologic function of the crippled cecum by other methods. Since developing a simpler procedure, I have found it necessary to resect the colon but eight times in my last sixty-eight cases.

The interference with physiologic function of the cecum is easily demonstrated by dividing the constricting band with a sharp knife at its junction with the parietal peritoneum. The ascending colon immediately rolls out until 3 or 4 inches separate the ends of the divided band, and the cecum regains its normal color and contracts on mechanical stimulation. The interposition of tissue is the most important step in preventing recurrence, and *free* omental grafts are used to fill in all gaps and cover all denuded surfaces.

We have found the unpuckered mesoappendix, spread out and turned over toward the midline, is most useful in covering the denuded surface developing on the mesentery of the ileum after the division of a "Lane's kink," and I believe that again the interposition of tissue is most important in preventing a recontraction of peritoneal surfaces and a redevelopment of the kink.

Diagnosis is based on x-ray study of the gastro-intestinal tract and bacteriological study of the stool. Routine gastro-intestinal examination with the immediate six and twenty-four-hour observations is not sufficient; observations every two hours from the sixth after ingestion of barium meal until the ileum is empty, and twenty-four-hour observations of the cecum until empty are essential. Also the mobility of the terminal ileum and cecum is studied as carefully as the motility. Often the break in the shadows does not become manifest until the forty-eight-hour

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observation, when the colon thins out or completely empties from the middle of the ascending colon, leaving a densely packed cecum, which persists for an indefinite period. I have followed this up to 120 hours, and consider this densely packed cecum as evidence of obstruction by the breaking of the peristaltic wave and plan operation to restore the lost physiological function to the cecum. Either before or after the gastro-intestinal study, all of these patients are given a balanced diet for forty-eight hours, and stool smears are studied for gram negative and gram positive bacterial balance. In chronic arthritics, instead of a 2 or 3 to 1 gram negative predominance, it is usually from 10 or 20 to 1. Only occasionally do we find a gram positive predominance.

AFTER-TREATMENT

After establishing drainage, it is my belief that these patients will slowly restore their own bacterial balance without treatment on a mixed diet in from two to three years. Attempts to shorten this period are constantly being made, and I will briefly outline the routine now being followed.

Patients with gram negative bacteria predominating are given a non-proteid diet, paraffin oil, acidophilus milk, abdominal support, and recently vaccines (after Burbank) from the predominating intestinal bacteria. On this regime, most patients show great improvement in six months, but the evidences of active arthritis are present for a year or more. The symptoms follow very closely the laboratory findings on the stool check, the joint symptoms subsiding as the count approaches normal and lighting up when the count slides back.

The patient in whom gram positive bacteria predominate is put on a proteid diet—usually milk—and returns to normal, both in bacterial count and in loss of joint symptoms much more rapidly than the gram negative.

If there is no mechanical intestinal abnormality, but instead a general colon sluggishness, the after-surgical treatment, designed to re-establish a normal intestinal flora without surgery, will produce the same result. In a group of ten cases great symptomatic improvement has followed this treatment without surgical intervention. Other patients, treated medically without any improvement, have had an immediate relief of symptoms following a surgical removal of intestinal obstruction followed by appropriate medical regime.

The joints become amenable to orthopedic treatment as soon as the pain subsides and operations and manipulations can be carried out without fear of lighting up another attack of acute inflammation, which always hampers the orthopedic surgeon when he attempts any radical procedure in the presence of infection.

I want especially to register a protest against fixation of joints by plaster casts and against manipulation of joints during active inflammation. It is almost impossible to get function in joints that have been subjected to these two forms of treatment. It has been my good fortune to have the help and cooperation of excellent orthopedic surgeons in the reconstruction of many of these patients. They have been able to get function in all types of deformed joints, except the ones that had been fixed. The previous surgeon, believing that he was dealing with an incurable disease, considered a stiff leg better than a painful one.

DISCUSSION

HARLAN SHOEMAKER, M. D. (Bank of Italy Building, Los Angeles) — Rheumatoid arthritis or chronic polyarthritis, as Doctor Smith is pleased to call it, is a very serious disease to the afflicted individual. First, it is very insidious in onset. Second, it is of a painful and disabling nature, and third, it is of long duration. These three factors, when brought together in one disease, make the patient a charge upon his friends and the public. This charge is not only an anxiety for the well-being of the relative or friend, but the financial outlay caused by the inability of the patient to help himself in any way, and by the prolonged personal service which must be devoted to the afflicted individual by his friends and relatives.

These factors justify any method of procedure that would ameliorate the symptoms. Dr. Smith has manifested great courage in pursuing his methods in the face of almost insuperable obstacles. His paper unfolds a world of technicality for surgeons of every specialty. The exact cause of arthritis is not known. Dr. Smith speaks of streptococcus viridens as one of its causes.

One would be inclined to think this organism a secondary invader, as it is in other diseases in which it is found associated. The third stage of tuberculosis might be cited as an illustration. The doctor lays a great deal of stress on obstruction to the alvin flow by bands and kinks. There are, however, innumerable cases on record in which stases has gone on to obstruction and become complete over a period of years. But arthritis has not developed consistently following the obstruction. Therefore, I naturally infer that his theory of permeability of the cecum as the cause of this disease, by flooding the joints and bursa with the infective agent, is nearer the correct explanation of the gross morbid pathology than any yet given.

I note by his paper that in the study of the gram positive and negative findings of the stool that the stools more frequently show gram negative bacilli than they do gram positive. The streptococcus viridens is a gram positive organism. One of the principal arguments in the doctor's paper that would lead me to believe an imperfect filter of the contents from the cecum is a factor in polyarthritis of the persons afflicted, is the result obtained in resection of the right colon as compared with any other method of treatment.

I have seen some of the author's patients, and my personal impression is that the right side colectomies suffer fewer recurrences and heal more quickly and are more often relieved of their pain than the patients upon whom plastic surgery of the intestinal tract has been done, or upon whom only remedial measures and diet has been carried out. The result in some of Dr. Smith's cases have been little short of miraculous. When a patient resumes his past occupation without pain and complete function of the joints, as has been accomplished by surgery in this very insidious disease, it would seem that his method is the method of choice for those suffering from chronic polyarthritis.

JOSEPH H. SHAW, M. D. (Hahman Building, 213 Exchange Avenue, Santa Rosa, California)—In commenting upon this splendid article, I feel that I am somewhat treading on holy ground, as I take into consideration the great work that Rea Smith has done along this particularly undesirable avenue of helpfulness in our profession.

Favorable comment is due for the large number of cases cited; the findings so carefully correlated for our convenience in summing up, and painstakingly minute study of all aspects of his cases.

Rea Smith has taken patients who are least sought by physicians. He has taken them after they were "old cases," medicated almost beyond help, and brought them relief and often comfort.

I have followed the work of this pioneer for a good

many years, and I have seen him achieve results truly marvelous.

Some twelve years ago I brought Rea Smith a patient from Kentucky. This was in the early days of the focal infection era, and my patient had every suspected place of infection cleaned out thoroughly, without benefit. Thanks to Rea Smith, this patient is living and comfortable. Iliosigmoidostomy was first tried, with immediate and wonderful improvement. However, as soon as the colon began to fill up the patient's symptoms returned. A complete colon resection was then done, with satisfactory results continuing up to the present time.

Many other patients I have known have been brought to Rea Smith's understanding care—cases medicated beyond endurance, and done to death by every cult known to Los Angeles. These patients have in the main been helped.

I agree with Doctor Shoemaker that Smith's "theory of permeability of the cecum as the cause of this disease, by flooding the joints and bursa with the infective agent, is nearer the correct explanation of the gross morbid pathology than any yet given."

I have studied this outline with deep interest and great care. I am firm in the belief that we have read a new signboard on the avenue of this phase of medical achievement. My only criticism of this article is that the author's surgical treatment of the ascending colon is not described more exactly. This I hope he will do in another paper, together with accurate proofs of his findings.

SKIN DISEASES IN TWINS

By THOMAS J. CLARK AND FRANK H. STIBBENS *

DISCUSSION *by Moses Scholtz, Los Angeles; Hiram E. Miller, San Francisco; Samuel Ayres, Jr., Los Angeles.*

TWIN births are uncommon enough to excite more or less general interest, the statistical ratio being about one pair of twins to eighty single births. We are not aware of the proportion of twins that show skin disease, but the literature is not large, so we can reasonably assume that comparatively few twins are so affected. We report three cases: one of psoriasis, one of acne vulgaris, and one of ichthyosis.

The occurrence of skin diseases in twins offers an unusual opportunity to study the subject of predisposition and inheritance in disease.

We expect to see children of the same parents show resemblance in form and feature, and our experience has been that twins are, many times, so identical that they are difficult to distinguish.

Quite naturally we inquire why do children of the same family resemble each other and still differ in many ways, and why are twins so identical? The answer is bound up in the broad subject of heredity.

Can diseases be transmitted by heredity is answered in the affirmative by many examples in families showing special deficiencies in this way; such an example, oft quoted, is hemophilia. In the case of the twins with psoriasis, we have a metabolic disorder of the skin that is an instance of hereditary influences.

Twins of the same sex are derived from a single ovum and are so identical that they can be considered as parts of a double individual. If the skins of these twins vary from the normal and that variation tends to identity, then it is reasonable to ascribe these changes to inherited tendencies.

We must here distinguish between instances of true heredity, understanding by such expression the qualities bound up in the cells of the new individual and transmitted as the specific tendencies, modifying their growth and development by the composition of the chromosomes of the cells as differing from a possible transmission of a foreign substance, such as a disease germ or parasite, even granting that such could be possible.

J. G. Adami, in Osler's Modern Medicine, states that: "It is at the moment of fusion that the new individual begins its existence. Any influence acting upon and modifying it after this moment is something acquired by what is already a separate entity; it is not inherited."

The acceptance of this idea excludes the hereditary transmission of infectious diseases, such as tuberculosis and syphilis. These processes may be acquired after conception, and may be congenital.

If this is the truth, then a disease that we accept as an example of heredity occurring in twins of identical features, we cannot believe is of an infectious nature. We, therefore, would hold that psoriasis cannot be of an infectious nature.

But if the physical agents of infectious diseases are not transmitted by heredity, the effects of their reactions on the body cells may be passed on by heredity and so we have immunity to some disease as an example of progressive adaptation passed from parent to child.

Comparatively little is known of the natural laws underlying the controlling factors of heredity, but science in general accepts the Darwinian principle of new species resulting from the selective action of the environment upon variations of the individual, the law of crossing producing hybrids as discovered by Mendel, where the dominant qualities are maintained in the ratio of 3 to 1 to the recessive ones, and the law of proportional family qualities inherited by the offspring as propounded by Galton, this being that the child in his makeup, partakes of the qualities of his parents to the extent of one-half; of those of his grandparents, one-quarter; those of his great-grandparents, one-eighth; and so on, taking one-half of the preceding fraction for each step backward, so that the child is a composite of all the generations past, or at least of those qualities that are passed on by selection as determined by the immediate environment.

It is by such a process that we say nature maintains a balance, and those qualities survive that best suit the conditions.

The following cases are reported from the skin department of the Alameda County Public Health Service:

CASE 1—Twin boys, age 14 years.

Their parents are living and well. No history of skin trouble in the family could be elicited. The boys are high

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